

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
17 July 2003 (17.07.2003)

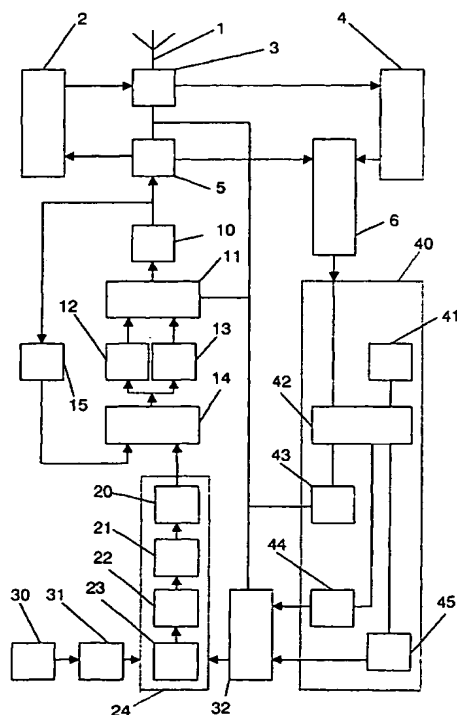
PCT

(10) International Publication Number
WO 03/058833 A1

- (51) International Patent Classification: H04B 1/40 (74) Agent: DULJVESTIJN, Adrianus, J.; Internationaal Octrooibureau B.V., Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (21) International Application Number: PCT/IB02/05349
- (22) International Filing Date: 9 December 2002 (09.12.2002) (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data: 02075026.1 7 January 2002 (07.01.2002) EP
- (71) Applicant (*for all designated States except US*): KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).
- (72) Inventor; and
- (75) Inventor/Applicant (*for US only*): LIU, Jigang [CN/NL]; Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL).
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: TRANSCEIVER WITH MULTI-STATE DIRECT DIGITAL SYNTHESIZER DRIVEN PHASE LOCKED LOOP



(57) Abstract: Transceivers for use in time division telecommunication units like mobile phones and base stations can be produced at lower costs by, in a transmitting mode, switching the direct digital synthesizer (DDS 24) driven phase locked loop (PLL 10-15) into a modulating state and supplying a modulation signal to the DDS and switching in the PLL a first filter (12) allowing the generation of an improved modulated signal, and by, in a receiving mode, switching the DDS driven PLL into an oscillating state and supplying a non-modulation signal to the DDS and switching in the PLL a second filter (13) allowing demodulation with reduced phase noise. A transmitter part (2) and a non-transmitter part (4,6) share a single DDS driven PLL, based upon the basic idea of using important parts in low cost transceivers for both modes, instead of using different parts for different modes, and achieve a good performance.

WO 03/058833 A1

Best Available Copy



Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB02/05349

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 H04B1/40		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 H04B		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the International search (name of data base and, where practical, search terms used) WPI Data, PAJ, EPO-Internal		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	US 5 423 076 A (MROCH ALAN B ET AL) 6 June 1995 (1995-06-06) column 4, line 12 - line 15 column 5, line 5 - column 6, line 6 column 6, line 36 - line 50 column 9, line 6 - line 34 column 9, line 53 - line 58 column 10, line 4 - column 11, line 2 figures 1,3 --- X DE 197 55 102 A (ELDAT GES FUER ELEKTRONIK UND) 18 June 1998 (1998-06-18) column 3, line 7 - line 13 figures 1,2 --- -/--	1-3,6-14 4 1,2,6, 8-14
<input checked="" type="checkbox"/> Further documents are listed in the continuation of box C. <input checked="" type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents: *A* document defining the general state of the art which is not considered to be of particular relevance *E* earlier document but published on or after the international filing date *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) *O* document referring to an oral disclosure, use, exhibition or other means *P* document published prior to the international filing date but later than the priority date claimed *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. *&* document member of the same patent family		
Date of the actual completion of the international search 28 April 2003		Date of mailing of the international search report 08/05/2003
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Masche, C

Form PCT/ISA/210 (second sheet) (July 1992)

page 1 of 2

Best Available Copy

INTERNATIONAL SEARCH REPORT

International Application No
PCT/IB 02/05349

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 852 439 A (MEIER HELMUT) 8 July 1998 (1998-07-08) column 3, line 55 -column 4, line 28 column 5, line 26 - line 30 claim 14 figure 1 -----	1,2,6, 8-14

Best Available Copy

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/IB02/05349

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
US 5423076	A	06-06-1995	NONE	
DE 19755102	A	18-06-1998	DE 19755102 A1	18-06-1998
EP 0852439	A	08-07-1998	DE 19700249 A1	09-07-1998
			EP 0852439 A2	08-07-1998

Form PCT/ISA/210 (patent family annex) (July 1992)

Best Available Copy